Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling
Portland Harbor Superfund Site
Surface Sediment – Downtown/Upriver
Review of Atterberg Limits

AECOM Job Number: 60566335.2.12
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OBJECTIVE:
To confirm Atterberg Limits testing was performed properly, results were calculated correctly, and test results are reasonable.

REVIEW:
Surface sediment samples were submitted to the TestAmerica Laboratories, Incorporated (TA) located in Burlington, Vermont for Atterberg Limits using ASTM D4318 (Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils).

Sample cross-reference for samples tested for Atterberg Limits:

Client Sample ID	Lab Group ID	Lab Sample ID	Plasticity Not Determined*
PDI-SG-B439	580-78527-5	580-78527-5	
PDI-SG-B440		580-78527-6	
PDI-SG-B449		580-78527-10	x
PDI-SG-B444		580-78527-12	x
PDI-SG-B452		580-78527-20	x
PDI-SG-B459		580-78527-22	
PDI-SG-B460		580-78527-23	
PDI-SG-B464	580-78604-5	580-78604-7	
PDI-SG-B475	580-78750-5	580-78750-1	
PDI-SG-B476		580-78750-2	
PDI-SG-B477		580-78750-3	x
PDI-SG-B483	580-78854-5	580-78854-1	
PDI-SG-B471	580-79055-5	580-79055-1	
PDI-SG-B472		580-79055-2	x
PDI-SG-B485	580-79202-5	580-79202-1	

The laboratory prepared the samples as described in the laboratory's SOP No. BR-GT-011, Rev. 8 dated 7/5/2016. The SOP is based on reference method ASTM D4318-05.

Liquid Limit (LL) – The liquid limits were determined using the Multipoint Liquid Limit – Method A. The blows for soil plastic limits are within 15 to 25, 20 to 30, and 25 to 35 blows as required.

Plastic Limit (PL) – The tests were performed using the required 6 grams (g) of material with the exception of PDI-SG-B440 (5.63g on second test), PDI-SG-B459 (5.34g on first test), and PDI-SG460 (5.75g and 5.33g on the first and second tests, respectively). Based on the limited difference between the two results for water content for each of these three samples, the lower mass used for the testing does not compromise the final results.

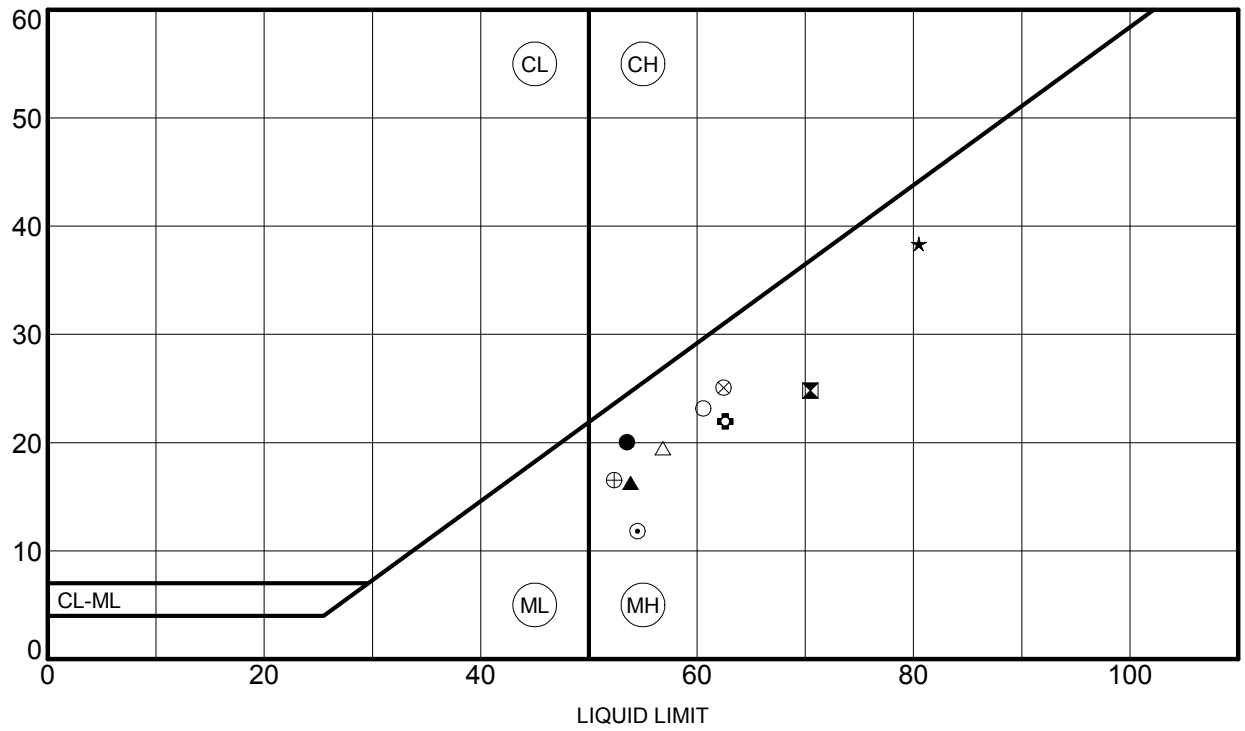
Plasticity Index (PI) – The laboratory calculated plasticity index using the formula

$$PI = LL - PL$$

as prescribed in the method.

Calculation Checks – The raw data provided by the laboratory in the level 4 packages was input to the gINT program for Atterberg Limits calculation to check the correctness of the reported results. The results were calculated correctly. All the results appear reasonable based on the testing results.

Other Notes:
The PI was not determined by the laboratory for samples PDI-SG-B449, PDI-SG-B444, PDI-SG-B452, PDI-SG-B477, and PDI-SG-B472. The percentage fines for samples PDI-SG-B477 and PDI-SG-B472 was less than 50%. The percentage fines for samples PDI-SG-B449, PDI-SG-B444, and PDI-SG-B452 were greater than 50% but the laboratory was not able to perform the 'roll' procedure on these samples to determine the PL. The samples crumbled before the procedure was completed. As the PL could not be determined, the PI was reported as nonplastic, NP.



	Specimen Identification	LL	PL	PI	Moisture	Classification
●	**580-78527-5, #5**	**54**	**33**	**21**		
⊠	**580-78527-5, #6**	**70**	**46**	**24**		
▲	**580-78527-5, #22**	**54**	**38**	**16**		
★	**580-78527-5, #23**	**80**	**42**	**38**		
⊙	**580-78604-5, #7**	**54**	**43**	**11**		
✿	**580-78750-5, #1**	**63**	**41**	**22**		
○	**580-78750-5, #2**	**61**	**37**	**24**		
△	**580-78854-5, #1**	**57**	**37**	**20**		
⊗	**580-79055-5, #1**	**62**	**37**	**25**		
⊕	**580-79202-5, #1**	**52**	**36**	**16**		

ATTERBERG LIMITS RESULTS

Project: Portland Harbor
Project Location: Portland, Oregon
Project Number: 60566335

AECOM

Figure

US_ATTERBERG_LIMITS J:\DCS\PROJECTS\ENV\60554349_WORKPLANS\400-TECHNICAL\440-FIELD AND LABORATORY DATA\02-LAB & DATA VALIDATION\ATTERBERG REPORTS\SURFACE SEDIMENT\K YANG REVIEW\LAB TESTS CHECK.GPJ URSSEA3B.GLB L